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Department of Information Technology

Interim Annual Report

Reforming the State of California's Use and Management of Information Technology

July 1996

"It must be remembered that there is nothing more difficult to plan, more doubtful of success, nor more dangerous to manage than the creation of a new system. For the initiator has the enmity of all who would profit by the preservation of the old institutions and merely lukewarm defenders in those who would gain by the new ones."

Niccolo Machiavelli

July 3, 1996

The Honorable Alfred Alquist, Chairman
Joint Legislative Budget Committee

The Honorable Quentin Kopp, Chairman
Senate Select Committee on Information Services in State Government

The Honorable Jim Cunneen, Chairman
Assembly Budget Subcommittee #5

Dear Gentlemen:

Pursuant to the provisions of Senate Bill 1 (Chapter 508, Statutes of 1995), it is my pleasure to submit this Interim Annual Report, a progress report covering the first six months of the Department of Information Technology's (DOIT) official operations since its creation on January 1, 1996. Specifically, Senate Bill 1 calls for a report on our progress to date in complying with the requirements of the legislation and a schedule for future actions.

This department was established by Governor Pete Wilson and the legislature with the philosophy that information technology should be one of the state's most effective instruments in reforming and streamlining government services. Over the preceding several years, however, it had become apparent to both state officials and the public that, rather than becoming the solution, the state's development, deployment, and management of information technology and telecommunications, to a significant extent, were part of the problem.

To this end, the DOIT was created to help plan and coordinate the state's multi-billion dollar annual information technology investment and to improve the procurement, design, implementation, and operation of information technology and telecommunications statewide. However, while plans and studies are often important, the DOIT is an implementation agency. To the question of what progress has been accomplished to date, I offer the following:

- Where the use of independent, private sector oversight was limited to only one project, today independent oversight teams are in place on all major information technology projects identified by the DOIT as warranting close monitoring;

- Where in the past, projects in jeopardy often continued to languish, wasting taxpayers' dollars, today independent oversight teams are working with the agencies to identify problems with projects early in development, where they can be more easily and less expensively addressed, and to ensure that vendors meet the expectations set forth in the contract;

- Where formal assessment of project risk was a limited, disjointed and reactive process, the DOIT has developed a proactive, California-specific risk assessment model that establishes clear goals at inception and provides valuable risk measurement criteria throughout the system development life cycle;

- Where budget, expenditures, and other critical information on these same projects were virtually unavailable to the legislature, analysts, auditors, even the program agency itself, the DOIT is working to make vital statistics on each project available to the legislature through a secure state intranet, and

- Where California's information technology investment was managed department by department, without statewide coordination and with the infrequent and sporadic benefit of advice from private sector, the DOIT is aided in developing state information technology policy by two advisory councils composed of state information technology executives and private sector experts.

In addition, as the body of this interim report will detail, the DOIT is exercising leadership in the areas of statewide telecommunications network integration; data center consolidation; the year 2000 conversion; statewide messaging, and overall project management.

I believe that the DOIT has accomplished much in these first six months, particularly in the area which has been our new department's highest priority - project oversight. However, I am well aware that much more remains to be done.

This report marks the beginning of what will be officially an annual, formal communication with the legislature and the public on our continuing progress. In addition, it is the DOIT's intention to keep the legislature apprised of progress and developments as warranted. It is my hope that this report is helpful and informative, and to that end I look forward to your comments and observations.

Best regards,

John Thomas Flynn
Chief Information Officer
(jtflynn@doit.ca.gov)

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Executive Summary

In 1994, Governor Wilson began a process to fundamentally reform the State of California's use and management of information technology. The legislature subsequently took action by passing a major piece of legislation – Senate Bill 1 by Senator Alquist – which the Governor signed into law in October, 1995. Senate Bill 1 (Chapter 508, Statutes of 1995) created the Department of Information Technology and, among other things, required the department to submit a progress report to the legislature on July 1, 1996, and on December 1 of this, and each subsequent year. This report details the progress the DOIT has made in its first six months of operation and spells out plans for future action.

Organizing the Department

A consistent theme among Senate Bill 1 and other reports analyzing the state's information technology operations, is the need for greater statewide coordination. A key component of that coordination, and a requirement of Senate Bill 1, is the creation of the position of Chief Information Officer (CIO) for the State of California. The CIO position was first created by Governor Wilson in Executive Order W-120-95 and was subsequently established by Senate Bill 1 on January 1, 1996. In addition, to assist the CIO in coordinating the state's information technology investment, and to ensure that state government has the benefit of advice from California's world-class private sector technology industry, Senate Bill 1 requires the DOIT to establish two advisory councils.

Senate Bill 1 requirements:

Increase statewide coordination of information technology projects and investment.

☑ The Department of Information Technology was created on January 1, 1996, and given authority to coordinate the acquisition, use, and management of information and telecommunications technology throughout state government.[1]

Establish the position of Chief Information Officer for the state.

☑ After conducting a nationwide search for candidates, Governor Wilson appointed John Thomas Flynn as California's first Chief Information Officer.

Create internal and external advisory councils.

☑ The DOIT has created and appointed members to the Information Technology Coordinating Council, a group of information technology and policy executives from

[1] Senate Bill 1 excludes the judicial and legislative branches from the department's authority. Other state agencies, including the University of California, California State University and Community College Districts, are also excluded from the DOIT's authority.

within state government, and the California Information Technology Council, a group of experts from private industry, academia, and federal and local government.

Enhancing Project Oversight

The DOIT's top priority during its first six months of operation has been increasing the level and effectiveness of oversight of information technology projects, especially on major projects already underway. Increasing the use of independent oversight teams to help ensure project success has been the primary focus of the DOIT's efforts to date. Independent oversight is a practice commonly used in the private sector, but one that has been historically underutilized in state government. The DOIT is working to standardize project oversight methodology and increase the information flow to the legislature.

Senate Bill 1 requirements:

Increase oversight on state information technology projects.

- ☑ Independent, private sector oversight teams are now in place for the state's largest and most complicated information technology projects. This constitutes a level of independent oversight never before seen in the history of the state's information technology program.

- ☑ The DOIT is developing a standardized methodology with documented procedures, reporting requirements, performance standards, and risk assessment tools for project oversight, which will be available in the fall.

- ☑ Via an intranet database being constructed by the DOIT, the legislature will have access to continuously updated information about California's information technology projects.

Improving Information Technology Management

At the core of the rationale for creating the DOIT is the desire to improve overall management of information technology, to ensure that the state is gaining the maximum benefit from its investment in this powerful enabler. The DOIT has focused on improving the state's risk evaluation process at the outset, streamlining the initiation and approval process, and improving project management.

Senate Bill 1 requirements:

Improve the overall management of California's information technology program.

- ☑ The DOIT has developed a Risk Assessment Model that will improve the evaluation of project risk before initiation, enabling mitigation plans to be developed. Created through a comparison of several models used in the private sector, the DOIT Risk Assessment Model is currently being calibrated using a small sample of information technology projects. It will be used on all state information technology projects by 1997.

- ☑ In cooperation with the Department of Finance and the California Council on Science and Technology, the DOIT has initiated a study of the state's information technology project

initiation and approval process. The results of this study will provide the basis for a major overhaul of the process.

- ☑ To improve the effectiveness of information technology project management, the DOIT is developing guidelines to ensure that projects are conducted in a disciplined, managed, and consistent manner. These guidelines will be available within 60 days. A plan for implementation of this methodology will be required as a condition of project approval.

Addressing Statewide Information Technology Issues

Implicit in the DOIT's mandate to bring greater coordination to the state's use and management of information technology is the identification of issues and applications that should be addressed statewide, instead of department by department. Statewide issues to which the DOIT has given top priority during its first six months are the year 2000 conversion, asset consolidation, electronic commerce, enterprise system application development, Internet usage, messaging, and security.

Senate Bill 1 requirements:

Identify issues and applications that should be addressed on a statewide basis.

- ☑ The DOIT has created an interagency task force to coordinate the state's response to conversion of databases to accommodate the year 2000 date change. The department is overseeing a statewide inventory and risk assessment. Year 2000 conversion project plans will be required of each department by October, 1997.

- ☑ The DOIT will prepare a data center consolidation plan, which will provide a blueprint for migrating the state to a more coordinated, modern, and efficient environment. This plan will create a foundation for replacing the state's older, so-called "legacy" systems with improved, less expensive, and more flexible solutions.

- ☑ In cooperation with the Department of General Services, the DOIT is taking immediate steps to integrate department and agency telecommunications networks into a single infrastructure established through competitive bid contracts for required services.

- ☑ The DOIT, together with representatives from the State Treasurer's Office, the Office of the State Controller, and Lawrence Livermore Laboratory, is exploring opportunities for utilizing electronic invoicing and payments with selected state vendors over the Internet.

- ☑ The DOIT has joined with the Department of Personnel Administration, as members of a task force created by the Office of the State Controller, to analyze the requirements for a new statewide human resource/payroll system.

- ☑ In response to explosive growth of Internet usage among state employees, the DOIT is establishing an enterprise Internet usage policy, which will be available within 90 days.

Organizing the Department

History and Background

Exactly six months ago, the provisions of Senate Bill 1 (Chapter 508, Statutes of 1995), which Governor Wilson signed into law in October of 1995, became effective creating the Department of Information Technology (DOIT). January 1, 1996, marked not only the beginning of the DOIT, but also the culmination of efforts by many people to instigate a fundamental reform of the state's use and management of information technology.

In 1994, Governor Wilson began efforts to ensure that the state was getting the most from its nearly $2 billion annual investment in information technology and telecommunications. With Executive Order W-88-94, the Governor created the Task Force on Government Technology Policy and Procurement, which conducted an expedited, 60-day review of state information technology practices. The Task Force developed an initial blueprint for reform, but acknowledged that its review was not comprehensive and that "there is more work to be done in studying the state's information technology policies and practices."

To build on the work of the Task Force, in July, 1994, Governor Wilson assembled some of the brightest minds from California's world-class, private sector high technology industry into the Governor's Council on Information Technology. This group undertook an exhaustive study and issued recommendations that urged state agencies to re-examine their core functions. The Council's report, entitled "Getting Results," is a guiding document for the work being done at the DOIT. In addition, this report was a catalyst for the Governor's Competitive Government Initiative.

The legislature has also taken action to reform the state's use and management of information technology. The Legislative Analyst's Office issued a report in June, 1994 entitled "Information Technology: An Important Tool for a More Efficient Government," and another report in January of 1996 entitled "Information Technology: An Update." These reports make specific recommendations to the administration for reforming information technology. However, the legislature's most significant action to date has been the passage of Senate Bill 1, this department's enabling legislation.

Taken together, the reports of the Task Force and Council, the publications by the Legislative Analyst's Office and Senate Bill 1 spell out nearly one thousand discrete action items for the department and form a matrix against which its work will be measured.

The Chief Information Officer

A consistent theme among "Getting Results," the report of the Task Force on Government Technology Policy and Procurement and Senate Bill 1, is the need for greater statewide

coordination of information technology investment and applications. Specifically, Senate Bill 1 gives the DOIT responsibility for the "development of statewide vision, strategies, plans, policies, requirements, standards, and infrastructure."

A key component of this statewide coordination is the creation by Executive Order W-120-95, and subsequently by Senate Bill 1, of the position of Chief Information Officer (CIO) for the state. Unlike the director of the former Office of Information Technology, the Chief Information Officer reports directly to the Governor – the first, and now one of only a handful of CIOs in the country to report directly to the chief executive -- and has final authority to suspend or halt an information technology project.

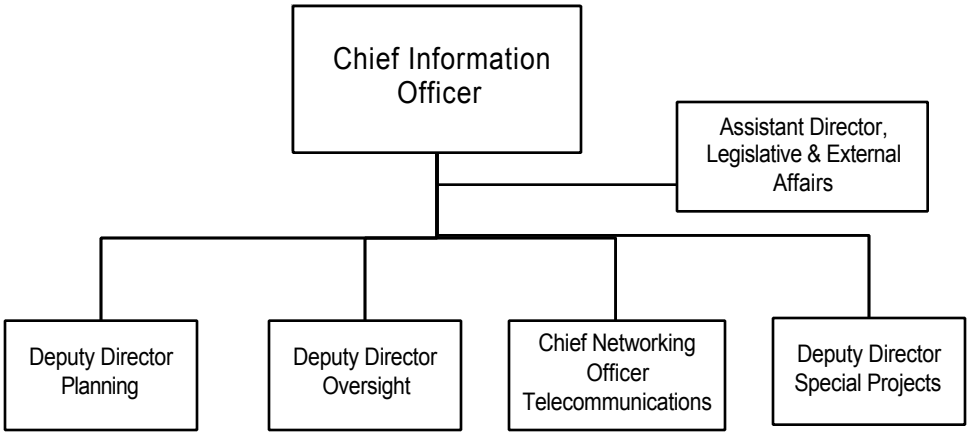
In addition, Senate Bill 1 grants the CIO specific authority to:

- Review proposed information technology projects for consistency with statewide strategies and suspend or disapprove initiation of a project according to that review;
- Make recommendations for remedial measures to be applied to agency information technology projects, including the use of independent oversight; and
- Develop policies and requirements needed to implement Senate Bill 1 in the State Administrative Manual or by Management Memo.

Just five months after creating the position in August, 1995, Governor Wilson appointed John Thomas Flynn to be California's first Chief Information Officer. Mr. Flynn came from Boston where he had served as the first CIO of the Commonwealth of Massachusetts.

Department Organization

The DOIT has been structured into five divisions which address the areas of responsibility given to the department by Senate Bill 1.



Planning

At the heart of many of the state's difficulties with information technology is a lack of strategic planning. This is most obviously the case on a statewide level, but is equally problematic at the agency and department level. The DOIT created the Planning Division to assist state agencies and departments in creating information technology strategies that will meet their business needs for years to come, maximize the information impact, and mitigate risk. Specifically, the Planning Division is responsible for:

- Assisting the CIO in developing California's first statewide information technology strategic plan;
- Providing guidance and assistance to departments and agencies to ensure that their information technology plans are consistent with the statewide information technology strategic plan;
- Along with the DOF and user agencies, undertaking the total re-engineering of the state's project initiation and approval process, and
- Coordinating special technology events, like the Executive Management Institute, Data Processing Managers Academy, and the California Information Technology Exposition.

Oversight

Government Code ß11700 et.seq. charges the DOIT with responsibility for information technology project oversight. To fulfill this statutory mandate, the department has created the Oversight Division, consisting currently of a deputy director and three oversight officers.

Increasing the level of project oversight, both through the efforts of the Oversight Division and through the use of independent private sector experts, has been the department's top priority since January. The DOIT has put into place oversight teams on all major projects identified by the department as warranting close attention. In addition, through the work of the Project Management Steering Committee, which is discussed later in this report, the department is developing policies which will ensure adequate oversight of future information technology projects.

Telecommunications

The network is the computer. Telecommunications has become the foundation which supports information technology enabling computers to be networked and information to be transported and shared. As such, Senate Bill 1 gives the DOIT responsibility and authority for all the state's telecommunications policy. The critical nature of this component warranted the creation of the post of Chief Networking Officer, the first position to be so specified by any state in the country.

This Division of the DOIT was created to implement strategic planning and policy direction for statewide telecommunications.

Special Projects

Senate Bill 1 charges the DOIT with addressing information technology issues that have statewide implications thereby avoiding situations which have existed in the past where a lack of statewide coordination resulted in disjointed, unstructured, incompatible and costly agency by agency solutions.

The Special Projects Division was created by the DOIT to identify and address these issues, particularly year 2000, electronic commerce, messaging, and other similar areas of statewide significance.

Legislative and External Relations

Information technology and telecommunications are issues of significant interest to the legislature, media and the public. To accommodate requests for information and to monitor and testify on legislation, the DOIT has established a Legislative and External Relations Division. In addition, the Assistant Director of this division is responsible for developing policies relating to Internet usage, public access to electronic government information, privacy, and technology in schools.

Department Funding

The DOIT was first created as the Office of Information Technology by Governor Wilson's Executive Order W-120-95 on April 13, 1995. The office was funded with a budget of $2.5 million which came in three equal parts from the General Fund, and reimbursements from the Health and Welfare and Teale Data Centers. A total of 15 positions was initially authorized. The office's funding included $1million for contracting with the private sector for specific tasks including independent oversight and strategic studies, to meet the requirements established by the Executive Order. Senate Bill 1 became effective January 1, 1996, placing the DOIT in statute, and the 1995/96 budget codified the funding and staffing levels of the new department.

As the department began to undertake its duties, it quickly became apparent that greater staff resources would be necessary, especially in the areas of project oversight and special projects. In addition, more funding would be needed to contract for private sector information technology expertise and services. Consequently, the DOIT submitted Budgetary Change Proposals (BCP) to the Department of Finance (DOF) in May, 1996 to increase staff by five positions and enhance contracting funds by $1 million. This proposal was approved by the DOF and adopted as part of the 1996/97 budget by the Legislature's Budget Conference Committee.[3]

Addressing Legislative Concerns

In January, 1996 the Legislative Analyst's Office (LAO) issued a Policy Brief entitled "State Information Technology: An Update" in which the method of funding the DOIT -- one third from the General Fund and two thirds in reimbursements from Teale and Health and Welfare Data Centers -- was questioned. That report read, in part:

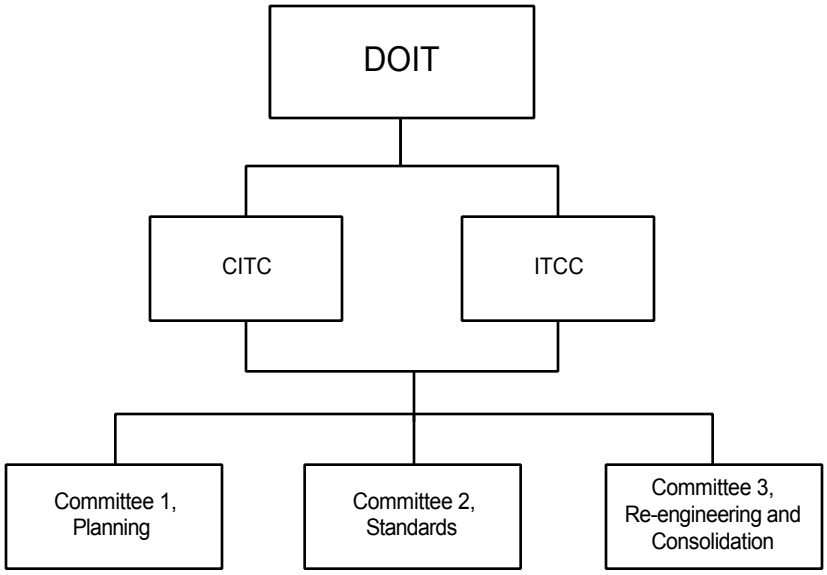
[3] Final budget figures were not available when this report went to print.

> *"This funding method is, however, inherently inequitable to the data centers and their client departments because it excludes a large number of departments which have major information technology programs, and presumably receive services from the DOIT but make relatively limited use of the two data centers, thereby contributing little or nothing to their support."*

As a result of the LAO's concerns, the legislature adopted budget language that requires the DOIT and the DOF to develop a funding mechanism, which distributes across all state agencies, on an equitable basis, the $1.7 million the DOIT receives in reimbursements from the data centers.

The department is working with the Department of Finance to develop a system that is fair to all state agencies and departments, that is the least burdensome to implement, and that as a chargeback, or pro rata type process, has been validated by DOIT's actual experience and services to agencies over more than just a six month history.

Advisory Councils



The Task Force on Government Technology Policy and Procurement recommends, and Senate Bill 1 requires, the establishment of advisory councils to assist the CIO in developing statewide information technology policy. Accordingly, the DOIT has assembled two advisory councils, one consisting of state government information technology and policy executives, the other consisting of experts from the private and nonprofit sectors. The two councils will be working closely together in joint committees to provide executive sponsorship to the state's information technology issues, including new development and trends, acquisition, planning, implementation, and project management.

The new state advisory committee, the Information Technology Coordinating Council (ITCC), is comprised of approximately 35 senior level program and policy representatives from the state's agencies. Through the involvement of both program and technical

management, the ITCC will be able to establish relationships that bridge the gap between policy and technology, fostering synergy within agencies and throughout state government.

The ITCC conducted its inaugural meeting in June, 1996, during which a continuing work plan was established. The next meeting is scheduled for July 11, 1996, and future meetings will take place on the second Thursday of every month. In early fall, an off-site, strategic planning retreat is scheduled to provide an opportunity for evaluation of progress and the development of a committee work plan for the remainder of the fiscal year.

The California Information Technology Commission (CITC) has a membership of approximately 25 people representing the private sector, academia, nonprofit organizations, and other governmental sectors. California's private technology industry has set the standard world-wide for excellence and innovation. Through the CITC, the department will tap into the expertise and experience of this invaluable resource, helping to bring proven private sector solutions to state government. After a thorough recruitment and screening process, the CITC appointees include some of the most knowledgeable individuals from California's information technology community. The first meeting of the CITC will occur in early fall.

Enhancing Project Oversight

Senate Bill 1 gives the DOIT responsibility for information technology and telecommunications project oversight. Specifically, the bill reads in part:

> *"It is the intent of the Legislature to create the Department of Information Technology that shall…develop specific statewide strategies, policies and processes, including oversight, to improve the state's overall management of information technology."*

During the first six months of operation, the DOIT has viewed ensuring adequate project oversight on continuing information technology projects as its most immediate priority. The department's efforts have been motivated partly by a need to thoroughly assess projects that were underway when the department was created, and partly by a desire to instill a new standard of accuracy and accountability in state information technology project management. By deploying independent oversight teams and improving project oversight methodology – steps which are discussed in detail below – the DOIT in a strategic partnership with program agencies and private sector oversight teams has achieved a level of oversight that is unprecedented in the history of the state's information technology investment.

Project Oversight Methodology

Project oversight is a methodology that employs a variety of evaluative and monitoring techniques to maximize the probability of project success. The project oversight process may rely upon quality control, inspection, testing, measurement, and other observation processes, and is generally accomplished against a reference base, such as one or more of the following:

- Contract, Interagency Agreement (IAA), Memo of Understanding (MOU), or Feasibility Study Report (FSR) (and subsequent related documents);
- Published Standards [DOIT standards and policy, State Administration Manual (SAM), Agency Procedure Manuals, legislation, etc.], and
- Design documents, project plans, and work assignments.

In the past, there was not a generally accepted standard in the state for how broad or how narrow the oversight process should be. The DOIT is developing policies, methodologies and guidelines on the state's oversight and project management practices, which will be made available on the DOIT Web site in September, 1996. At that time, the state's information technology managers will have orientation and training sessions in the use of the policies and practices for project oversight and project management.

Independent Oversight

The objective of independent project oversight is to ensure that departments' planned objectives are achieved. Accordingly, proper oversight demands that the earliest possible notification be given regarding potential impediments to progress. In this way mitigation

actions can be taken to reduce the risk of project failure. Oversight that does not include early warning of potential problems in time to prevent them from being realized is of marginal value.

The most effective project oversight is applied in a condition of independence, i.e., the individual performing project oversight must be detached from the organizational chain of command of the project managers. In this manner, they more easily retain their independence and impartiality, and their findings are less prejudicial.

Independent project oversight is usually done using a variety of management and technical review methods, many of which are based upon professionally recognized processes or standards promulgated by organizations such as:

- Comptroller General [Performance Auditing (non-financial auditing) used by all public audit agencies and CPA firms];
- American Institute of Certified Public Accountants (AICPA) Statement on Auditing Standards (SAS) related to management consultants' work, and
- American National Standards Institute (ANSI) including standard 1012 governing software and systems independent verification and validation (IV&V).

Independent oversight is a common practice in the private sector, but has previously been underutilized, or completely ignored, on state projects. The DOIT identified the application of enhanced project oversight as one of its earliest strategic goals.

Private sector, independent oversight teams have been put in place on the major information technology projects in state government. These oversight teams report to the DOIT and will help ensure that projects are on-time, on-budget, and meet the specifications laid out in the contract. This constitutes a level of oversight never before achieved in the history of California's information technology effort. This does not mean that there will no longer be problems. It is significant to note that industry research demonstrates that information technology projects, particularly large, complex applications, suffer a failure rate of over 50% in the private sector. The State of California's oversight program has one primary objective, i.e., to improve those figures dramatically. There is evidence that this effort is already yielding benefits.

Independent Oversight Case Study: Correctional Management Information System

In May, 1996, the Department of Corrections (CDC) announced that it is withholding payment of $2.0 million to its prime contractor in the development of its inmate tracking computer system, the Correctional Management Information System (CMIS).

The CDC, which signed a contract in December, 1994 for the design and development of the CMIS system, has coordinated its oversight of the project in accordance with the policy, subsequently established by the DOIT, that all major computer systems under development in the state be assigned independent oversight contractors.

The CDC was the first state agency to hire such a "success partner." The department's success partner, a private sector technology company, performs independent oversight on the CMIS project. When the primary contractor submitted its design phase deliverable, it was reviewed by the CDC staff and the oversight consultant. They found the design specifications

submitted by the contractor to be incomplete, inaccurate, and inconsistent. A formal letter rejecting the design was sent to the contractor on March 22,1996.

In March, 1995 the contractor started the $40.1 million contract in which they agreed to design and build the system to departmental specifications within 28 months. When completed and operational, CMIS will streamline information management services within the largest correctional system in the country. The fixed-price contract with the contractor called for the development of a fully operational system that will be completed in five major steps: analysis of the department's needs and objectives, design of the project, building the project, documenting and implementing the project, and turnover of the completed system to the CDC.

To date, the CDC has paid out $2 million (less than 5 percent of the contract cost) for the successful completion of the first phase of the project, the analysis phase. This was the first and only product for which the contractor has received payment. The analysis phase information has been used in the design phase of the CMIS project.

The CMIS example underscores the purpose of independent oversight, to identify flaws that the primary vendor has missed and the department does not have the expertise to catch. In the past, this type of "course correction" would have been very difficult. These types of problems may not have been identified, or if identified, may have been ignored for years, making them exponentially more expensive.

The CMIS example shows that independent oversight works, and is a powerful new weapon in the state's project management arsenal.

Improved Information Flow to the Legislature

One of the greatest obstacles to adequate oversight of information technology projects has been the lack of readily available information. As a result, Senate Bill 1 contains a provision requiring the DOIT to create a database of projects with approved Feasibility Study Reports (FSR) and to make that database accessible electronically to the legislature.

In response, the DOIT, working with the Technology Investment Review Unit (TIRU) in the DOF, is developing the Project Initiation and Approval Database, which will be accessible to the legislature through an intranet application.

This DOIT intranet web site will include a preliminary, interactive database of projects with approved FSRs. The approved project database will be updated in real-time. Additionally, the DOIT intranet site will include summaries of major projects, additional background material, and related reports.

Improving Information Technology Management

Project Management

The lack of adequate project management discipline has been widely cited as a contributing factor to past information technology project failures in state government and is a common theme in the various reports critical of state information technology policies and practices. For example, Governor Wilson's Task Force on Information Technology Policy and Procurement made the following recommendation:

> *"Develop a common set of project management guidelines and tools required on all major IT projects. This includes the development of change management guidelines to facilitate implementation. Appropriate training and skill development programs should be developed to support the guidelines. Qualified project managers should be 'certified' based on their skills and experience."*

The effort to strengthen project management discipline throughout state government began even before the DOIT was officially created. Operating under the auspices of the Governor's Office of Technology, this department began developing a statewide project management strategy in late 1995. The primary component of this strategy was the creation of the Project Management Steering Committee, a group of key state IT executives whose departments and agencies are currently the primary practitioners of project management or are those most affected by the lack of project management.

Earlier this year, under the guidance of the DOIT, the steering committee reached consensus on a two-pronged approach to improving project management throughout the state.

First, the steering committee worked with the DOIT to develop a framework for a project management methodology for use statewide, and recommended that the DOIT require a plan for implementation of this methodology as a condition for project approval.

The DOIT's project management methodology will help ensure that information technology projects are conducted in a disciplined, managed, and consistent manner. Project planning is recognized as the basis for all management efforts associated with a project. Planning is, therefore, the key to the project management methodology.

The methodology's planning process, which is expected to be addressed throughout the life of the project, consists of the basic planning elements such as risk identification, task definition, schedule development, resource identification, quality processes, and budget development. Once the planning elements are defined and documented, they are utilized to support project tracking and oversight functions throughout the life of the project.

The framework design is adaptable to meet the unique requirements of the wide variety of information technology projects conducted by the State of California. The flexibility of the framework acknowledges that large, complex projects require a much more rigorous application of the methodology than a small, well defined project with readily achievable

goals. In the early planning phases of any project, the project manager assesses the project characteristics and determines how to tailor the framework to meet management objectives.

Use of the methodology by state organizations will promote the delivery of quality information technology products and result in projects that are completed on time and within budget.

The DOIT will initiate orientation and training sessions on the use of the project management methodology within 60 days. In addition, the mandatory use of the methodology, or an alternate methodology which meets the DOIT requirements, will be documented in a management memo. Appropriate sections of the State Administration Manual will be amended to reflect the new requirement.

In the second approach recommended by the project management steering committee, it was agreed that the DOIT should develop a risk assessment model, which is discussed below.

Risk Assessment Model

As the agency responsible for California's information technology program, the DOIT set out to design an effective oversight program to help ensure the success of technology initiatives throughout their entire life cycle. Each initiative has a standard project life cycle which includes conception, development, and operation. Correspondingly, from a scheduling perspective, state oversight involves the Feasibility Study Report (FSR), the Special Project Report (SPR), and the Post Implementation Evaluation Report (PIER), as well as project audits on a periodic basis.

This approach is disjointed and has several major shortcomings. During the FSR process, there is a focus on budgetary review, with limited oversight, and no clear direction established for consistent project budget, expense, encumbrance, schedule, and progress reporting. During development, oversight has been limited to evaluations *after problems have occurred.* For example, SPR's are prepared once 10% budget variance is anticipated, or in some cases has already occurred. Little is being done to focus on developing mitigation strategies. Finally, the PIER review is not performed on a regular and consistent basis, and the lack of a systematic process to disseminate the PIER results for statewide review and discussion inhibits its ability to be utilized as a learning tool to help improve future management processes.

A proactive approach establishes clear goals at project inception and provides value throughout the system development life cycle by:

- Identifying potential areas for risk and supporting the development of mitigation strategies;
- Evaluating the effectiveness of risk management and recommending improvements, and
- Building statewide institutional memory for managing information technology projects.

To accomplish this, the state needed a Risk Assessment Model (RAM). RAM is a term used to describe the arithmetic measurement of the level of potential risk associated with various components, or categories common to all projects. In other words, a RAM, by assessing various factors relating to a project, can identify those "riskier" aspects or categories which

may then be shored up by project managers. A formal risk assessment performed during the early stages of a project will help identify major areas of project risk.

In order to determine the appropriate risk assessment model for the DOIT, an evaluation was performed on various RAMs in use throughout the industry and the comparison yielded several common major categories of risk which were being evaluated by these tools. These categories, which provide a valuable framework for structuring the DOIT's risk evaluation program, are explained below:

Strategic Risk - The degree to which the proposed project is in alignment with business strategies;

Financial Risk - The probability that the organization will be able to secure funding for the entire project life cycle from sponsoring agencies;

Project Management - The impact on all areas of project management necessary to complete the project, including a realistic timeframe, sufficient resources, necessary skill levels and a sound project management approach;

Technology Risk - The degree to which the project must rely on new and untested or outdated technologies, including hardware, software, and networks, and

Organizational Impact and Operational Risk - The amount of change needed within the organization as well as the effort required for continued operations at project completion.

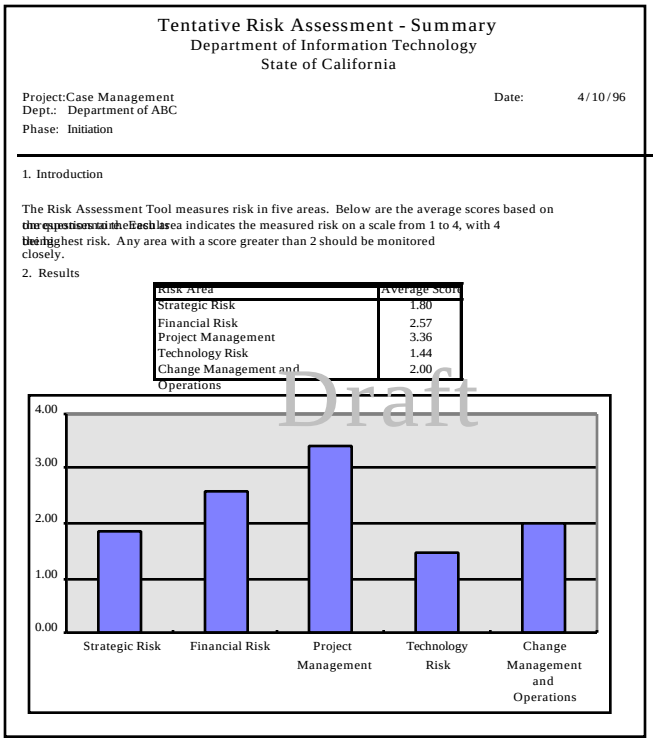
This framework forms the basis of the DOIT's new risk assessment model. This tool is based on the best practices of all the products evaluated and provides a sound model that is uniquely customizable to California's technology programs. It utilizes a standardized questionnaire to assess risk levels, which are produced through an automated report generation feature.

The output from this tool, the Risk Assessment Report (sample on following page), will provide a thorough overview of project risk areas and can be automatically generated when the survey is completed. The report will provide a general summary of risk scores in each of the five risk categories, and a detailed analysis of responses to questions.

In order to ensure that the new tool is accurately evaluating project risk, a small group of projects is being used as a pilot to help "calibrate" the model. In addition, a team of state IT officials is providing comments and feedback on the Risk Assessment Model. The DOIT anticipates that in 1997, this model will be used on all information technology projects in the state.

Risk Assessment Report

- Automatically generated when survey is complete
- Provides a general summary of risk scores in each of the five risk categories
- Detailed analysis of responses to questions



Tentative Risk Assessment - Summary
Department of Information Technology
State of California

Project:Case Management
Dept.: Department of ABC
Phase: Initiation
Date: 4/10/96

1. Introduction

The Risk Assessment Tool measures risk in five areas. Below are the average scores based on the responses to the questions in each area. Each area indicates the measured risk on a scale from 1 to 4, with 4 being highest risk. Any area with a score greater than 2 should be monitored closely.

2. Results

Risk Area	Average Score
Strategic Risk	1.80
Financial Risk	2.57
Project Management	3.36
Technology Risk	1.44
Change Management and Operations	2.00

Draft

Initiation and Approval Process

Senate Bill 1 grants responsibility for information technology project approval to the DOIT. Specifically, Article 2 (b) of the bill reads "The department [DOIT], among other duties, shall perform the statutory duties and responsibilities of the former Office of Information Technology." The legislation also specifies that the DOF's project approval authority should focus on "the approval of expenditure of funds" only. The legislation in effect disbanded the former DOF, Office of Information Technology (OIT). Subsequently, the Technology Investment Review Unit (TIRU) was established by the DOF to oversee IT project budget approval.

As documented in Senate Bill 1, a major purpose for the establishment of the DOIT and the elimination of the OIT was to create a streamlined approach to project planning, documentation and justification. However, in the eyes of many agencies, the new process, and its organizational and functional realignment has not had its intended effect. The respective roles of the DOIT and TIRU regarding the review and approval of new projects is

not clear to many departments. As a result, both the DOIT and TIRU resolved to remedy this situation.

In the spring of this year, a task force was created, drawing on the expertise of the DOIT and TIRU representatives including former OIT officials, as well as private sector sponsorship from the California Council on Science and Technology (CCST). This group was assigned to review the current process, and recommend changes in order to design a project initiation and approval process, which adds value to the project documentation and justification exercise. In addition, their task was to review the proposed project from a totally new perspective, asking the following question: Is this project…

- Consistent with the administration's overall goals and objectives;
- Coordinated with overall statewide planning;
- Consistent with statewide technology standards;
- Consistent with interoperability requirements among database systems;
- Verifiable in terms of an adequate and documentable return on investment (ROI) which considers future operating costs, and
- Organized and managed by the sponsoring agency's project organization to have an acceptable risk assessment factor?

The CCST has completed their initial review and will be issuing a preliminary report in early FY96-97. It is anticipated that this report will recommend sweeping changes in the information technology project initiation and approval process.

It is significant to note that interagency coordination between the DOIT and TIRU has improved significantly. In fact, the collaboration between the two agencies in the design and implementation of the DOF's new information technology project status database has been unprecedented. This should be a model of things to come.

Addressing Statewide Information Technology Issues

The Year 2000 Conversion

Information technology promises to lead state government into the next millennium, but the greatest threat to computer systems may actually come from the year 2000 itself. Existing computer programs will not operate correctly when the calendars change to the year 2000 because most databases store dates with just two digits indicating the year, e.g., 2/7/68. Without immediate attention, California computer systems will realize failures. For example, the Office of the State Controller must complete their conversion in a timely manner or the state would be unable to write checks. The Department of Motor Vehicles has already had to take action to make drivers licenses compliant. Interestingly, as an interim solution, rental car companies have reportedly had to enter "99" in their systems for all license expiration dates ending in the year 2000 or later. Indeed, if this problem is not addressed, nearly all computers, from the desktop personal computer to the huge mainframe, could fail.

State government's reliance on information technology in every aspect of its business has come to be so pervasive that the policy and fiscal implications of such a failure are nearly incalculable. The cost of a response has not yet been determined, but it is certain to be significant. In a January 23, 1996 report, "State Information Technology: An Update," the Legislative Analyst's Office, using very early estimates, suggests that addressing the year 2000 problem will cost the state up to $50 million dollars.

The scope of this problem is undetermined; however, it is clear every computer system or electronic device must be tested for year 2000 compliance. Because of the virus-like nature of the year 2000 problem – corrupt data from a non-compliant database can infect data in a year 2000-compliant database – the state's response to this problem must be comprehensive. To that end, the DOIT has exercised leadership in developing a statewide solution.

To assist with statewide coordination, the DOIT has created a statewide task force, made up of year 2000 leaders from agencies, data centers, and external sources (i.e., county organizations). The DOIT has surveyed state departments and agencies to identify all year 2000 project managers and has assembled a database to facilitate information sharing. In addition, a web site (**www.year2000.ca.gov**) has been developed for the sharing of information by project managers. Date standards, tool reviews, and a directory of expertise will be available to state employees at this web site.

The DOIT is coordinating a statewide year 2000 project office which will be staffed with representatives from each major data center and nationally recognized experts in year 2000 compliance. This office will coordinate inventory, impact, analysts, coding, and testing efforts statewide. The goal of the project is year 2000 compliance for all critical applications, along with providing cost savings measures for statewide implementation. The establishment of a formalized statewide year 2000 office will formalize the working relationship required for successfully facing the year 2000 challenge.

The information gathered will assist each agency in developing an implementation plan, budget and prioritized schedule. The DOIT will furnish the required format for the project implementation plan by October, 1996. All plans are due to the DOIT by October, 1997.

Asset Consolidation

California invests nearly $2 billion annually on information technology and telecommunications assets and services. As a result, the state has acquired large-scale assets with values in the multi-millions of dollars. However, because of the lack of statewide coordination, many assets are redundant and should be consolidated.

Data Centers

The State of California, as reported by a survey of state agencies sponsored by the DOIT earlier this year, currently support operations variously described as "data centers" including, but not limited to, those at the following departments:

- Caltrans
- Franchise Tax Board
- Department of Consumer Affairs
- Health and Welfare Data Center
- Treasurer's Office
- Department of Water Resources
- Teale Data Center (Business, Transportation, and Housing Agency)
- Lottery

Total annual budgets for these centers are in the hundreds of millions of dollars, with the organizations employing up to a thousand workers. In addition to their budgetary and staffing correlation, these data centers have many other common characteristics, from facilities to disaster recovery plans, operations centers to software licenses, and hardware to operating systems. Each center is planning for the future and its customers' future with limited coordination.

All this is being done at a time when the private sector is not only consolidating its common platform data centers but totally outsourcing in many cases the management, operation, development, and maintenance of the entire process. The State of California dramatically lags in this trend.

The DOIT intends to prepare a data center consolidation plan. A steering committee, consisting of representatives from data centers and their customers and chaired by the state CIO, will review the data center operations, focusing on their current technical environment -- hardware platform, operating system, storage capability, applications supported, personnel, facilities -- and their related growth direction.

The resulting plan will provide a blueprint for migrating the state to a more coordinated, modern, and efficient environment, and will provide a foundation to begin replacing the state's older, so-called "legacy" systems with better, cheaper, more flexible solutions -- a transformation that is long overdue.

Telecommunications Networks

The State of California has seen a proliferation of data and voice networks which are collectively redundant and unnecessarily expensive, with an annual budget approaching $500 million. Pursuant to its responsibilities under Senate Bill 1 to formulate telecommunications policy for California state government, and consistent with Governor Wilson's *Competitive Government* initiative, the DOIT working in close collaboration with the Telecommunications Division of the Department of General Services (DGS/TD), has endorsed a plan to integrate the state's 17 telecommunications networks.

Consistent with the findings of the Governor's Task Force on Government Technology Policy and Procurement, and the Council on Information Technology, as well as the recommendations of a private sector study, the Telecommunications Division, in coordination with the DOIT, is taking immediate steps to integrate department and agency telecommunications networks into a single infrastructure established through competitively bid contracts for required services. The objectives of this initiative include:

- Exploiting expertise and competition in the private sector;
- Leveraging the state's aggregate buying power to obtain premium discounts from telecommunications providers;
- Ensuring diligent and effective management control and coordination of state expenditures for telecommunications services;
- Enhancing the quality and flexibility of the telecommunications infrastructure, and
- Realizing the full potential of telecommunications as a strategic business enabler.

The implementation business plan, to be completed this fall, will call for a phased execution over a two and one-half-year time span. During the initial phases, the DGS/TD will coordinate the termination of existing service agreements, immediately contract for interim replacement services, and aggressively consolidate redundant networks onto an integrated infrastructure. The DGS/TD will then begin to award competitively-bid omnibus service contracts and will divest state-owned or operated telecommunications assets. The DOIT will actively monitor all phases and ensure that the objectives of each milestone are achieved.

Successful implementation of the jointly developed and executed network integration implementation plan will:

- Free valuable resources, which can be diverted to supporting the critical missions of public sector organizations;
- Remove the burden of daily telecommunications management from state departments and agencies, freeing innovative managers and executives to

focus on the exploitation of telecommunications to more efficiently and effectively serve the public;

- Establish a telecommunications infrastructure capable of meeting current and future demands for service, and

- Ensure that the hard-earned tax dollars of California's citizens are expended with maximum purchasing power and economies of scale.

Internet Usage

The Internet is growing exponentially as a communications tool for government and corporations. One major information technology research firm estimates that the Internet will be the primary channel for the delivery of corporate information as soon as 1997.[4]

California currently has no statewide policy regarding employee use of the Internet and the implications of the lack of such a policy are varied:

- The state runs the risk of being liable for illegal and inappropriate actions a state employee may make while using state equipment to access the Internet. For example, an employee may transmit information over the Internet that is prohibited by the California Public Records Act, or they might access an address to conduct illegal activities;

- The ability of the state to maximize the benefits provided by this powerful research and communications tool is endangered, and

- Inadequate training of Internet users may pose a threat to the security of the network, either through the introduction of viruses or by unauthorized access gained as a result of inadequate protective measures.

The DOIT is developing an enterprise Internet usage policy for state government, which will be disseminated within 90 days.

Messaging

State messaging systems are disparate. Even exchange of e-mail between the two houses of the California Legislature is difficult and, in some cases, impossible. It is often only possible to send electronic messages between departments using the Internet, which is an insecure system.[5] At the same time, there is no access to reliable e-mail addresses for state government.

The development of distributed computer systems, specifically Local Area Networks (LAN), has made achieving enterprise-wide message exchange a complex goal. Nearly all

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[4] Gartner Group Strategic Analysis Report "Developing and Enterprise Internet Policy," 2/16/1996

[5] The proliferation of World Wide Web browsers with integrated e-mail has brought an increasing reliance on Internet mail, which is insecure and unreliable. Changes, and emerging technologies are predicted to insure Internet security in product forms like electronic commerce. The DOIT is closely monitoring technological advances to integrate future developments.

departments have at least one LAN upon which they exchange messages and many have more than one. Most LANs are different, and even ones which are alike have not been installed using any type of established standards that would facilitate global messaging.

The DOIT sees the creation of an enterprise messaging capability as an essential building block for an effective IT infrastructure. As such, the department is aggressively pursuing such a capability. This approach includes:

A task force of data center professionals, industry experts, and the DOIT staff has been created and has begun to work on solving the e-mail dilemma. Although each data center has a discrete strategy, there is agreement on a general approach to ensuring that the state has a reliable and successful messaging capability. This approach includes:

- Establishing statewide electronic mail directory services;
- Ensuring delivery of mail between disparate mail systems;
- Establishing standards that will guarantee that the new system can be integrated to existing systems, and
- Striving toward more robust and secure messaging systems capable of integrating work flow and groupware-like capabilities.

The DOIT established a set of recommended guidelines for purchasing LAN based e-mail systems, guidelines for setting internal standards, and procedures to assist agencies in evaluating LAN-based e-mail systems. The recommendations are being reviewed by the DOIT staff and members of the messaging task force.

According to a leading information technology research organization, approximately 35% of the money spent on LANs is spent on evaluation, testing, and making the final purchase. This expensive problem is caused by a lack of a standard approach or methodology in the selection process. The DOIT has created a recommended document for conducting pilots or evaluations by state departments and agencies. This document, under the review of the task force, is designed to provide significant savings to state information technology divisions.

Already, the DOIT and the DOF are synchronizing directories, enabling them to share spreadsheets, word processing documents, and multimedia presentations. The next step is taking advantage of the bridges that are provided through the data centers for communicating with other departments and agencies.

Security

Security is a critical component of information technology systems. The increasing ease of access to information through interconnected networks makes the protection of information from unauthorized access or tampering an imperative issue for government. Additionally, security is vital for electronic commerce, which promises to reduce operational costs and speed the delivery of goods and services. Electronic processing of payroll, welfare and food stamp benefits, invoices, and political reports all depend upon secure transactions.

Data Security

Ensuring data security is a continuous and evolving process; security systems must be implemented while new, enhanced technologies and standards are being developed. The DOIT intends to ensure that data security is a priority in the development of systems, and is approached with statewide coordination. To that end, pursuant to the provisions of Senate Bill 1, each agency has designated a data security officer who is charged with protecting the integrity of their agency's information. Under direction of the DOIT, these officers will facilitate statewide coordination of data security.

An equally important aspect of data security is ensuring that, in the event of a natural or man-made disaster, information that is critical to state business, such as tax rolls, remains intact and accessible. This disaster recovery planning process is especially critical in California, in light of our state's history of natural disasters.

Disaster Recovery

Nearly every business operation in the state is vulnerable to disaster. From earthquakes to accidental cable cutting by ditch digging crews, California experiences natural and man-made disasters every day. Many of California's most critical applications are consolidated in data centers. The loss of a data center could mean motor vehicle files would be inaccessible, state welfare checks could stop being cut, and a host of other critical applications would come to a grinding halt.

The problems associated with disaster recovery are far-reaching. Simply getting the computers running does not fulfill the operational recovery goals of organizations. Disaster recovery for an enterprise as large as the state requires extensive research and planning prior to implementation. As part of the year 2000 effort, extensive data is being collected on the computers and computer applications throughout state government. The DOIT is planning to incorporate the results of individual agency year 2000 inventory efforts in an overall disaster recovery plan.

There has been heightened concern by the legislature regarding the Board of Equalization (BOE) and the Franchise Tax Board (FTB) disaster recovery procedures and systems. The DOIT agrees that disaster recovery procedures for both the Board of Equalization and Franchise Tax Board warrant immediate attention, independent of a statewide effort. However, the DOIT and the DOF agree there are not sufficient data to verify the extent of need, or to substantiate that the funds requested by the two agencies are appropriate.

The DOIT proposes to engage an independent consultant to perform a risk assessment of both the BOE and FTB disaster recovery needs. This independent risk assessment will provide the information to make an informed decision on the two plans and provide the DOIT information and data that will contribute to the development of a statewide disaster recovery policy.

The risk assessment will define the extent of the needs, establish acceptable policy, and help to define alternative backup/disaster recovery procedures. The DOIT proposes a complete risk assessment and will then provide the legislature with a formal recommendation on the BOE and FTB proposals. This approach will solve an immediate need while allowing the DOIT to incorporate the best practices in the statewide disaster recovery program.

The DOIT will be providing disaster recovery policies and standards for all of state government.

Electronic Commerce

The ability to provide information, benefits, and services electronically, without direct, personal contact has revolutionary implications not only for business, but perhaps to an even greater extent to government. Virtually any government activity that involves filling out a form, registering, paying, receiving benefits or supplying information can be done effectively, and significantly more inexpensively, through electronic means. As a result, the DOIT is working with several agencies to aggressively pursue electronic government opportunities.

Currently, hundreds of thousands of individuals and organizations receive paper checks/warrants, benefit coupons, etc., each day from the state. As a result, in conjunction with the Treasurer's Office and the Office of the State Controller, the DOIT is preparing to initiate a pilot in early FY 96-97 to transform this process into an electronic one, substituting electronic payment for the paper-based system.

The DOIT anticipates that this procedure will become ubiquitous, as electronic benefits transfer, electronic data interchange, and other forms of electronic commerce begin to predominate in state government, savings millions of taxpayers' dollars.

Enterprise Systems

Senate Bill 1 noted that technology systems which are statewide in scope should be coordinated. To this end, the DOIT has joined with the Department of Personnel Administration, as members of a task force created by the Office of the State Controller, to analyze the requirements for a new statewide human resource/payroll system. In addition, the DOIT is pursuing the development of statewide strategies regarding other enterprise systems including:

- Financial management reporting systems;
- Project management and scheduling systems, and
- Procurement systems.

The development of these new statewide systems is crucial; but these are major undertakings which inherently are of little value in the short term. Since the information is critically important now, the DOIT has been exploring the development of "data warehouses" which aggregate related information from various, usually dissimilar databases. Initially, it is anticipated that the collection of information technology project financial data will be captured in such a manner before the end of 1996, automatically updating the project information on the project web site.

Procurement

The current procurement process in California is slow, cumbersome and counter-productive to departments' missions to provide quality, cost-efficient service to the taxpayers of the state. The flaws in the current process are especially pronounced when applied to the acquisition of information technology. Briefly stated, the state is trying to acquire technology that advances in literally a matter of months, with procurement processes that can run for years.

To shorten the time it takes to complete an acquisition and to enable state agencies to obtain the best quality and value for each tax dollar spent, Governor Wilson is sponsoring the California Acquisition Reform Act of 1996 (AB 3307, Brewer). This legislation promotes a more competitive and cooperative partnership between the private sector and the state while ensuring ethical business practices and public trust.

Specifically, the Governor's legislation repeals the existing provisions governing the acquisition of technology, commodities and services and replaces them with a streamlined, common sense approach to governmental purchasing. The bill decentralizes the Department of General Service's (DGS) authority to acquire both goods and services and allows state departments to act on their own behalf. DGS will retain oversight and approval authority. In addition, the bill reforms and simplifies the manner in which contract awards are protested and resolved by giving DGS authority to resolve contract award protests with a fast and fair administrative decision.

While not specifically a part of procurement reform, the state's reinvigorated campaign over the last year to supplement its competitively bid, prequalified listing of master service agreement approved vendors, particularly technology firms, has truly been revolutionary. What had literally taken months, even years, can now be completed within a matter of a few days as a result of the diligence and enterprise of the DGS Procurement Department.

Finally, it is significant to note that the DOIT has assumed overall authority in terms of information technology and telecommunications procurement policy. While DGS has operational authority for technology procurement, this will conform to the policy established by the DOIT. In addition, the DOIT intends to continue a dynamic, aggressive, and innovative policy review. This will be accomplished with extensive involvement of the private sector, particularly the California Information Technology Council, to ensure that the State of California's technology procurement policy is the finest in the country.